78.04

January, 1956

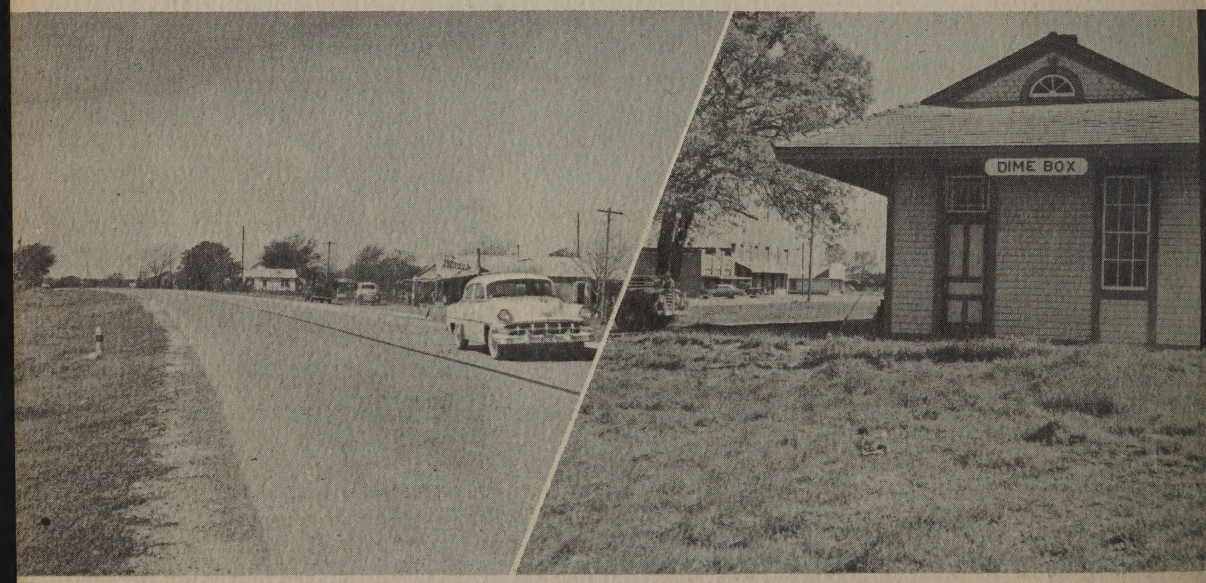
TEXAS Highways

What's in a Name?

On Farm-to-Market Road 141 in eastern Lee County, District 14, three miles southeast of State Highway 21 and northeast of Giddings, is one of the best known small towns in Texas — Dime Box. It even received national recognition when it was chosen as the starting point for the March of Dimes campaign in 1944.

The town developed from a settlement originally called Brown's Mill. When Brownsville demanded that this name be changed, sentimental residents chose Dime Box to commemorate an old community dime box. However, there are two stories concerning this box. According to one tale, John Ratcliff, the postman, was often asked to do shopping for settlers when he went to town. Ratcliff placed a box at the village store and asked customers to deposit a ten-cent fee for running errands. The other version of the story says it was a community mail box which early settlers erected on the road to San Antonio in the days before there was a post office in this section. Freighters would pick up mail for a service charge of a dime for each round trip — from one to four times a month.

In 1913 the town was moved to its present location on the Texas and New Orleans Railroad and by 1950 the population had grown to 400. At the original town site is Old Dime Box, a little community of 50 inhabitants. It is on S.H. 21 about half a mile west of the junction of S.H. 21 and F.M. 141.



About the Cover . . .

While much of the rest of the country is shivering in its boots, the Magic Valley of the Rio Grande is going about the usual business of producing much of the nation's fresh vegetable supply. At least one crop is harvested each month of the year, and truckloads of cabbages or carrots or beets or spinach move continuously over the Valley's network of highways on their way to consumers.

This group of workers is harvesting a field of parsley, cutting enough of the tight-curled leaves to garnish many a fancy dinner "up North." While citrus fruit is the Valley's most valuable crop, it still has time to produce more than half the truck crops grown in the state. With completion of Falcon Dam production of fresh vegetables in mid-winter will rise even higher.

VOL. III

TABLE OF CONTENTS

No. 3

Tanganyika to Texas 3
Harry Land

Marking Construction Stakes 6
Pat H. Shields

Shell Stockpiling 7
Marvin Neel

Service Awards 14

The Districts Pass in Review 20

Improving Barricade H 28
Frank Van Houten

Tractor Mounted Wagondrill 30
R. N. Jennings

Transporting a Jari Mower 32
G. W. Black

Materials and Tests 33

Over the Highways 39
Comments From the Traveling Public

TEXAS Highways

The purpose of this publication, "Texas Highways," is to furnish a medium for presenting practical ideas and information. Employees are invited and urged to submit suggestions and relate experiences which would benefit or be of interest to Highway employees. These conclusions and data are not necessarily endorsed by the Highway Department nor are they to be construed as instructions.

Photographic services are available and other assistance may be obtained, if desired, in preparing material for submission. All material and comments should be directed to the Information and Statistics Division, Austin 14, Texas.

"Texas Highways" is published monthly by and for State Highway Employees for departmental use only. *The use or reproduction of the material contained herein is prohibited without the expressed permission of the State Highway Engineer.*

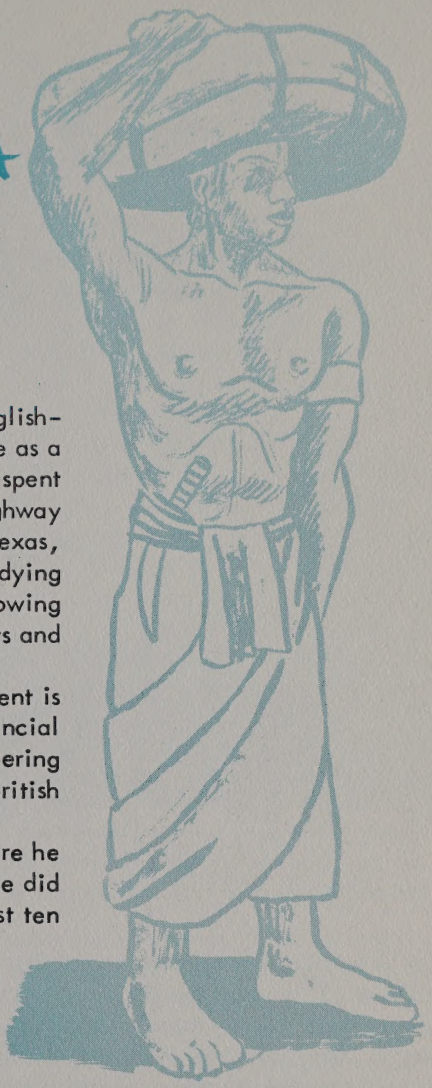
COMPILED AND EDITED
Information and Statistics Division

Do You Know Texas ?

Traveling by endless conveyor to storage bins is a small portion of Rio Grande Valley "gold." There these grapefruit will wait their turn to be washed, sorted, peeled, canned, cooked, and shipped to markets all over the world. The multimillion dollar citrus industry of Texas has been in production for only a relatively short time, but its rise has been so rapid that it has placed Texas among the top three states of the nation in annual production.

Rio Grande Valley soil is ideally suited to grapefruit culture in particular, and the pink-meated Valley fruit is nationally famous. The growing of citrus in Texas' subtropical area was begun over 200 years ago, when trees were introduced by the Spaniards, but until after 1900 with its railroads and better shipping methods, the fruit was used for home consumption only. Valley citrus production for the 1947-48 season was approximately 28 million boxes of grapefruit and four million boxes of oranges with a total value of $18,041,000. Disastrous freezes in 1949 and 1951 cut production back to less than 10 per cent of its former peak, but rapid progress is being made in replanting ruined groves, and the Valley expects this important industry to soon be back in full swing again.

TANGANYIKA TO TEXAS



ED. NOTE: Harry Land is a quiet, soft-spoken Englishman who, as he says, has signed on for a life of exile as a public works engineer in British East Africa. He has spent the past six months in the United States studying highway and bridge construction in Alabama, Georgia, Texas, Missouri, Arkansas, and Illinois. While in Austin studying Texas construction methods he consented to do the following article making some comparisons between our highways and those in Tanganyika.

His position with the British Public Works Department is similar to our District Engineer except that as a provincial engineer he must do all sorts of public works engineering due to the scarcity of trained personnel in the British colonies.

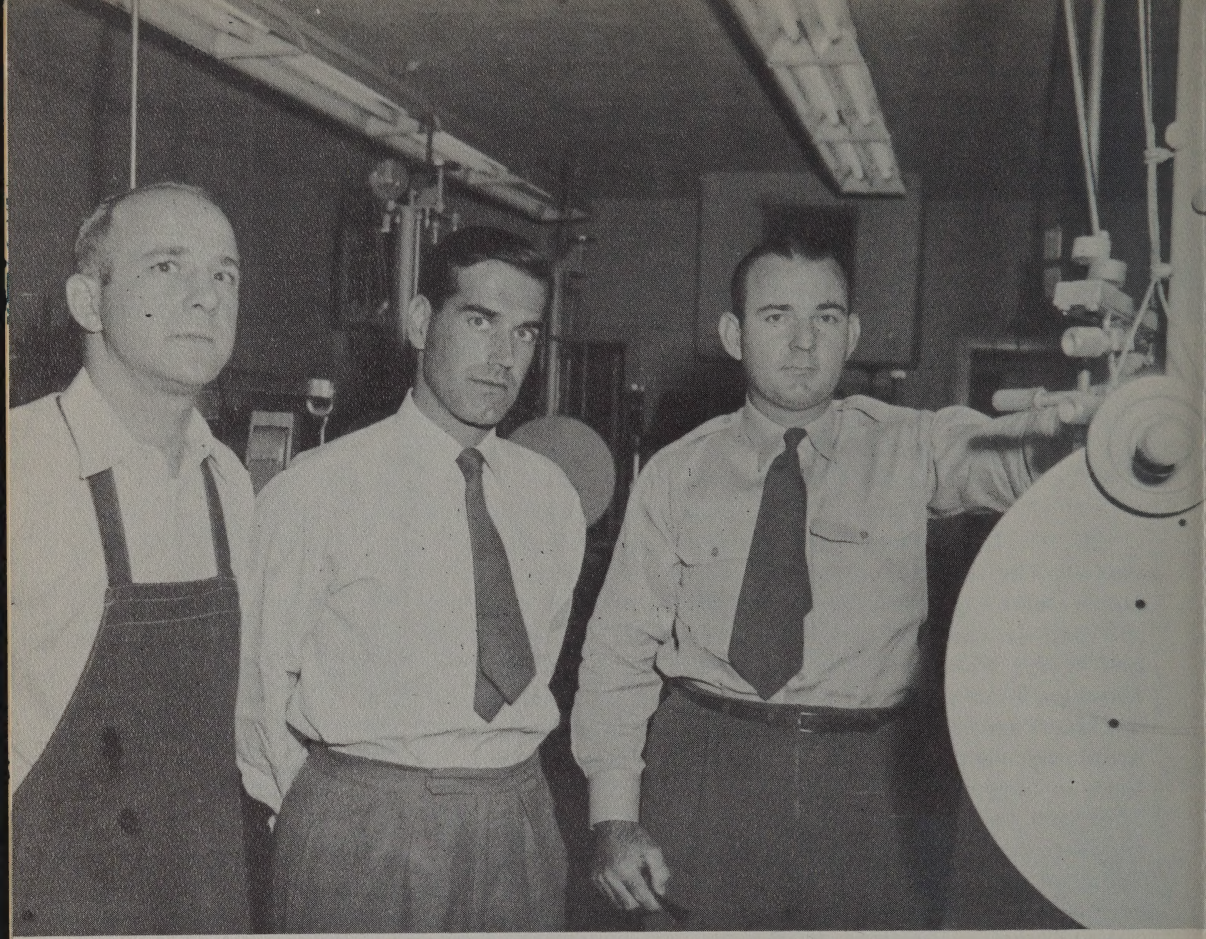
Land was educated at St. Andrews in Scotland where he took a scientific engineering course. For two years he did research in jet engines at Rolls Royce, and for the past ten years he has been in British East Africa.

Harry Land, Professional Engineer
Tanganyika, British East Africa

During my short stay in the state, I have been impressed with the similarity in climate and terrain which exists in both Texas and Tanganyika. We seem to have many common problems. You have the Taylor marl clay to deal with in the Dallas area and we have vast stretches of volcanic ash material which resembles black butter during the rainy season in the Highlands area.

The Highway Department in Texas seems to be steering a middle course with regard to the huge differences in design standards I have met in other states. One of the southern states exerts the maximum amount of attention on the provision of a carefully designed and constructed base course. This is paved with the very minimum thickness of asphaltic concrete. Yet, in a neighboring state the minimum of base course material, not always prepared with overmuch scientific control, is covered with what might be termed an excessive thickness of hot-mix asphalt. Such a thickness of expensive pavement begins to do the work which perhaps the relatively inexpensive base course should do.

I have been impressed with the degree of decentralization which exists



Herbein Meiske, Junior Laboratory Assistant, Harry Land, Professional Engineer from East Africa, and Avery Smith, Soils Engineer, pose beside automatic tamping device used in the Materials and Tests Laboratory at Camp Hubbard.

in Texas as compared with the other states I have visited; authority is delegated to a much greater extent from the central highway administration to the various district offices. This is the pattern which we follow in Tanganyika. I cannot help feeling that the lack of uniformity in design and constructional methods which is bound to arise in such circumstances is more than compensated for by the speed with which plans pass from the design to the constructional stage.

Before my arrival in Texas, I met several would-be humorist engineers. I was warned in the other states to look out for bridges which spanned riverless rivers. I have seen many dry crossings in the state which look like our sandy river beds in East Africa. And yet perhaps we can also claim the same kind of bigness in Tanganyika. When we have a drought, we have a drought and when it does rain, it rains in no half measure.

There are, however, several differences in approach to a problem in our two states. Tanganyika is a young country and, although possibly potentially rich, is short of the ready cash which makes the difference between the materialization of huge highway schemes and shelving those schemes to the pipe dream cabinet for a short period of time. Since we have to pay as we go, there is a real effort on the part of the government to build what we can afford and to do that building as part of a planned stage development program. It is possible that a hundred years ago you in Texas had the same problem. A decision is always required in the beginning whether to build a highway system so

that it will be used by traffic to open up virgin country or whether to construct that system when traffic is crying out for it. Perhaps it is the age-old question of deciding which comes first, the chicken or the egg.

We are, however, both headed in the same direction, notwithstanding the different paths. When I have seen, on my Texas travels, large dirt-moving units of mechanical plants working in teams, I have been most impressed. I have been reminded at the same time of the problem being tackled in my own country by 500 to 1,000 laborers carrying head pans. A tractor and pan requires gasoline, oil, and water. I have often wished it were that simple to satisfy large groups of laborers with food, accommodation, and the hundred and one other things which appear to be vitally important when their several wives travel with them.

Since labor is our chief means of getting work done it becomes at the same time our biggest interest and problem. Life is comparatively simple in a community which adheres to one religion. In Tanganyika we have Christians, Moslems, Hindus, and many pagans. Since the government supports the Christian religion it sets aside so many Christian holidays during the year. The Moslems and Hindus are generally delighted to celebrate these holidays while at the same time they insist on observing their own. The pagans somehow manage to cash in on all three. The procedure lends a festive air to most months of the year but it is not perhaps the most conducive means of progressing a steady road constructional program.

Change comes hard to the East African mind. The white man has been in the country for less than 100 years. It is difficult for the African to accept that a change in method, as compared with what he has been doing for thousands of years, is necessarily a good thing. I remember that on one constructional job the earth moving was going rather slowly since the Africans were using the conventional method of loading half a cubic foot of earth into pans, carrying them on their heads and depositing the dirt a short distance away. It occurred to me that we might invest in a few wheelbarrows. The laborers were presented with the barrows and shown how to use them. They seemed relatively happy with the innovation when I left them, but then it is always difficult to differentiate between the African's natural courtesy and his willingness to please the strange white men. When I returned unexpectedly to the job a half hour later, I discovered two or three of the more enlightened laborers carrying their wheelbarrows on their heads with a few spoons full of earth inside them.

The acquisition of right of way in Texas presents a weighty problem, especially in the major cities where so much compensation for built-up areas is involved. In my own country the problem is not so much expensive as politically dangerous. There are many of the more fertile areas where the African is exceedingly land conscious. Any effort on the part of the government to take over land, whether it is to provide right of way or a site for a cattle dipping scheme, is viewed with mistrust. The matter has to be carefully handled and well publicized before the acquisition takes place. The public relations end of our organization generally consists of a District Commissioner holding several baraza's in the area, to which hundreds of tribesmen come from round and about to listen to the reason why. The proceedings often last for several hours and are generally punctuated with examples of local wit on the part of the audience.

I would like to take this opportunity of saying thank you for the kindness which has been shown to me by state highway officials during my visit to Texas. I hope that we in Tanganyika will have the opportunity of returning the hospitality some day.

MARKING CONSTRUCTION STAKES

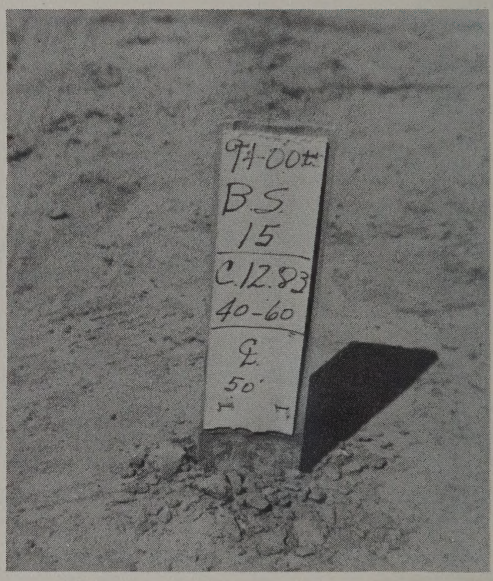
Pat H. Shields, Chief Inspector
District 8

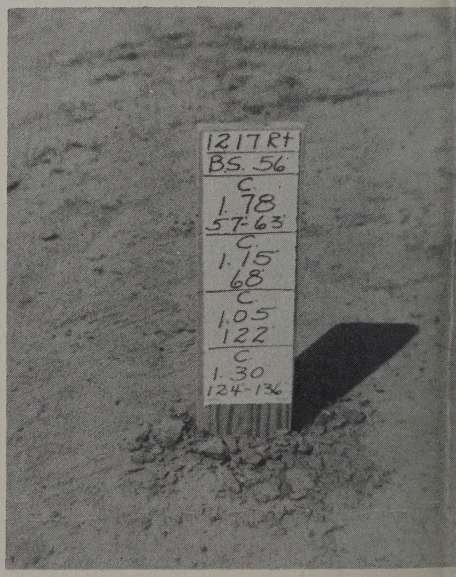
In the Colorado City residency we have adopted a method of marking construction stakes which consists of attaching to the usual grade stake a piece of cardboard on which the grade information has been lettered in India ink. This replaces the usual lumber crayon.

We have found this is an easy and fast way to mark stakes. They can be marked at any time, in the office or on the job. They are easy to read, stay through all the construction, and can be read from a good distance away. In case of a grade change or mistake, pull the cardboard off and mark the cut or fill on the back and staple it back on the stake. When the job is finished, salvage the stakes and use them again, thus reducing the cost. The stakes work very well on freeway construction as well as on farm-to-market roads, because there is so much to write on one stake.

The materials needed for these markers are stakes (one foot by four inch by sixteen inch), cardboard, billboard stapler and staples, and a No. B5 Speedball pen and India ink. We buy the cardboard in 18- by 28-inch sheets and cut it into eighteen pieces. The cost is very small.

The contractors on whose jobs this method has been used think it is the best method of marking stakes they have had. They said they liked it because the data can be read from a distance of 40 or 50 feet. The sand and rain do not cut the writing off for the duration of a long construction period.





Shell Stockpiling

Marvin Neel, Associate Resident Engineer
District 20

LABELLE: The shell stockpiling operation for District 20, Project B-20-A-3, was begun February 23, 1955, and completed in May, 1955. This shell was stockpiled for use on S. H. 73, one stockpile at LaBelle, approximately sixteen miles west of Port Arthur, and one at Van Noord, about two miles east of Winnie, Texas. R. B. Smith, Inc., of Houston, was the contractor for the stockpiling operation with Parker Brothers, Inc. of Houston, dredging and furnishing the shell.

In order to conduct the operation of stockpiling shell at LaBelle, it was necessary to transfer the shell from the large 3,500-cubic-yard barges which were loaded at the dredge in Galveston Bay, to smaller barges which would go through the salt water locks on Taylor's Bayou. The shell was then unloaded at an unloading site and hauled by truck about two and one-half miles to the four-acre stockpile site at LaBelle.

The following equipment was necessary to transfer and stockpile shell at this site:

I. Tug — 125 tons (length 70.4 feet, beam 25 feet, 900 HP with a 9-foot draft),

II. Four steel barges (length 210 to 240 feet, width 35 to 42 feet, draft 9 feet, capacity 3,500 cubic yards),

III. Tug — 42 tons (length 50.2 feet, beam 17.1 feet, draft 5 feet, 320 HP),

IV. Four coke barges (length 170 feet, width 26 feet, depth 10 feet) usable capacity 800 cubic yards,

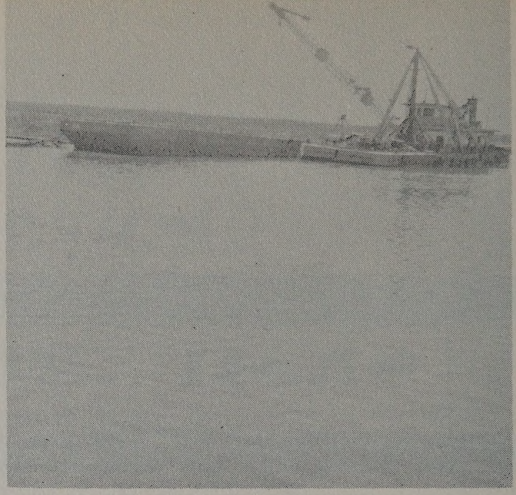
V. Derrick barge, powered with 160 HP diesel, tender barge, 60 HP launch, and two skiffs and outboard motors.

The derrick barge Robbins was placed in the old Taylor's Bayou channel just downstream from the tide-control structure (salt water dam) and just west of the approach channel to the salt-water locks in the relocated Taylor's Bayou outlet.

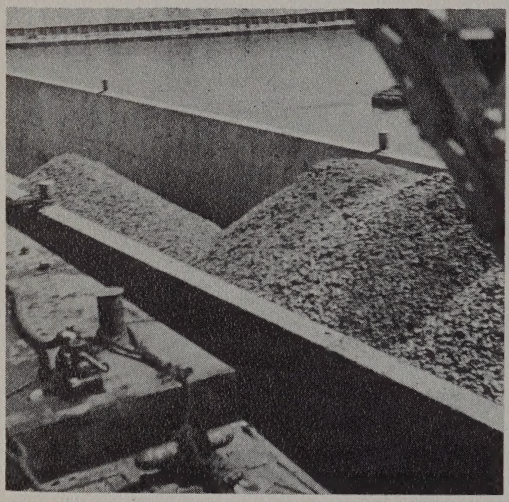
At this location in the old Taylor's Bayou channel the operation of transferring shell by the derrick barge Robbins from the large barges coming in from Galveston Bay to the small barges was carried out.

The operation of transferring shell was conducted by the Robbins on a 24-hour-day basis except in a few instances when the shell supply from Galveston Bay was depleted. This occurred three times during the job

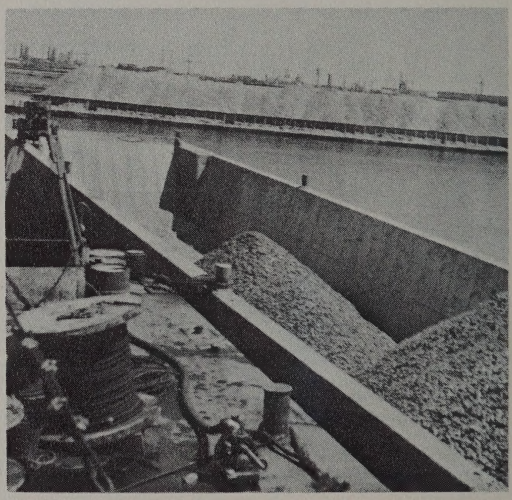
Taylor's Bayou Salt Water Locks.



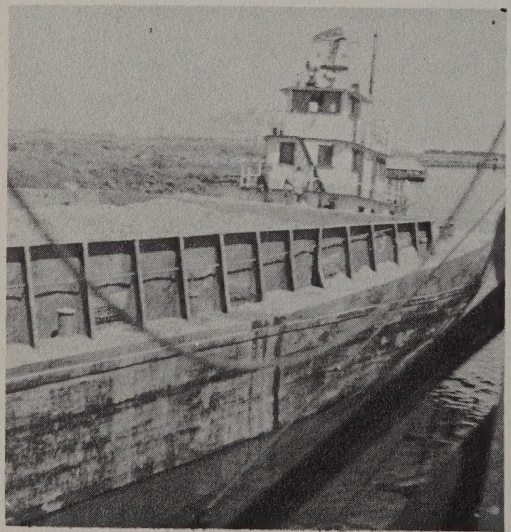
Derrick barge Robbins, tender and small shell barge.



Transferring shell to small barge to go through Taylor's Bayou Locks.



Small barge in foreground, large barge in background.



Tug Newell positioning large barge for unloading.

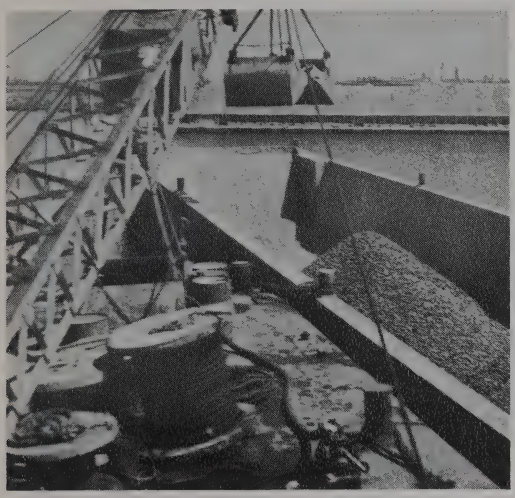
Derrick barge Robbins and tender barge.

but the delays were of very short duration (a few hours), and had little over-all effect on the transfer operation.

Toward the end of the operation at Pine Tree Lodge the water became so low that the loads on the small barges had to be reduced in order to clear the spillway at the locks. On March 28 we were notified that our operation would have to be discontinued in two or three days; however, a timely rain raised the level of the water in Taylor's Bayou and we were able to continue without interruption until we completed the operation at Pine Tree Lodge.

Quite a bit of difficulty was experienced in passing the small barges through the salt-water locks on Taylor's Bayou due to their length. The distance between the inside gates on the locks is 208 feet face to face. The length of tow using the small barge with the tow boat tied as short as possible was 220.2 feet. This made it impossible to close the inside gates, as is normally done, on the locks in passing the tow through the locks. This lack of room to maneuver in the locks caused the tow to hit and damage the locks on several occasions and this then resulted in loss of time in our stockpiling operation. This also resulted in additional expense to the contractor.

As a result of the difficulty experienced in transferring shell downstream of the locks and then carrying the shell through the locks, which of course resulted in increased bid prices



Derrick barge Robbins transferring shell.

Derrick barge Robbins standing by. Tug Newell moving out large shell barge.

Looking south at shell stockpile site.

Looking east at shell stockpile site.

Looking south at shell unloading site.

Looking down into 800 cubic yard shell barge.

Loading shell into hopper.

Looking downstream from Taylor's Bayou Bridge at tug and small shell barge.

due to this difficulty, we made some further inquiries concerning possible changes in the operation, should we decide to stockpile shell again in the vicinity.

We have been informed that if we schedule our stockpiling during the late fall and early winter, we could cut out a plug in an old dredged bypass channel for a nominal sum. The opening of this bypass channel would eliminate the need for the transfer operation and also for the handling of the tow through the locks. When the stockpile is completed then the bypass channel could again be plugged.

The shell was unloaded at Pine Tree Lodge on Taylor's Bayou directly into trucks when possible, which was about 60 per cent of the time, and hauled 2.41 miles to the stockpile site at the intersection of the LaBelle Road and S. H. 73.

The contractor used a Northwest dragline powered with 160 HP International diesel and equipped with a two-cubic-yard clamshell bucket to unload the barges at Pine Tree Lodge. The only difficulty experienced in unloading the shell at Pine Tree Lodge resulted from the use of deep barges which were used in the transfer.

The stockpile was built in about two-foot lifts beginning on the northeast corner of the 5.53-acre site and was carried progressively upward and outward. The stockpile on the LaBelle Road was about 22 feet high and covered approximately four acres of the site when completed. The side slopes on the completed shell pile were approximately 50° with the horizontal.

VAN NOORD: The unloading site for the shell to be stockpiled at Van Noord was changed, at the request of the contractor, from a point on Spindletop Bayou on Pipkin's Ranch to a point on the Intracoastal Canal three miles east of High Island.

The unloading point on the Intracoastal Canal at the High Island bridge was located on a leased site adjacent to a dredge slip approximately 150 feet wide and 300 feet long. The contractor reworked 1,000 feet of existing board road with approximately 1,500 cubic yards of shell in order to get from the unloading point to S. H. 124. The haul on the shell from this unloading point to the stockpile site at Van Noord was 17 miles against a nine-mile haul from the unloading point on Spindletop Bayou to the stockpile site. The state saved approximately $8,000 set up for building and maintaining a haul road through Pipkin's Ranch through the change in the location of the unloading site.

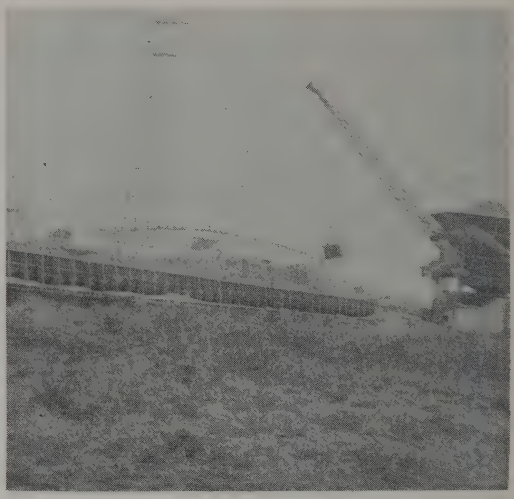
The shell was transported from the dredge in Galveston Bay to the unloading site near High Island on the large 3,500 cubic yard barges.

The 47,584 cubic yard shell stockpile was built in about six weeks at Van Noord. Several times during the building of this stockpile, operations were interrupted due to high winds which made it impossible to operate the dredge out in the bay. These winds invariably changed the characteristics of the shell being dredged; thus the necessity for shutting down the dredge. About 20 trucks handled approximately 1,600 cubic yards of shell per day.

No operational difficulties, other than the one mentioned, were experienced during the stockpiling operation at High Island and the job was completed.

Of some possible interest in the report is the fact that something in excess of $125,000 was saved on this material as placed in stockpile. Also it is felt that there are certain intan-

Loading shell hopper at High Island for stockpile at Van Noord.



Looking southwest at shell unloading operation at High Island.

Looking west at shell barges and hopper at High Island.

Loading shell in hopper at High Island.

Looking south at shell stockpile at Van Noord.

Looking north at shell stockpile at Van Noord.

Looking south at shell unloading operation at High Island.

gible savings which will accrue to the state that we feel may be as high as $30,000. One of these is a ready access to the shell by the surfacing contract on the job for which the shell was procured. This would prevent various kinds of delays in construction caused by an uncertain shell supply.

To summerize, we feel that the stockpiling operation was relatively trouble-free and that the savings to the state make it worthy of consideration not only for shell but other scarce materials in the future, particularly where the materials are out of line in price or where producers are scarce.

Service Awards

Four 35-year certificates were presented at the September and November Service Awards programs, making a total of 21 of these awards that have been earned by Highway Department employees since the program was started. Seventeen 30-year employees and thirty-four 25-year men were also honored by the Commission at the September program. Ten 30-year men and thirty-nine 25-year men were added to the list of award winners in November.

Both 35-year employees honored at the September meeting are women who began service with the Department as typists in the old Registration Division. Miss Erin Bradfield, Operations Clerk, Operations Division, transferred in 1935 from Registration to Operations where she has worked as a typist, stenographer, and stenciler. In 1944, by official Commission leave of absence, she entered the armed services where she served as a dental technician, and returned to the Department in 1946. Miss Bradfield is now responsible for all addressograph work in the Main Office.

Miss Freda Swiedom, Motor Vehicle Clerk, Motor Vehicle Division, remained with the division when Registration was merged with the office of Certificate of Title in 1945 to form Motor Vehicle Division. She was absent from the awards program.

Two 30-year men, Homa L. Patty, Semi-skilled Laborer, Lubbock District, and H. D. Trussell, Senior Designing Engineer of the Amarillo District were unable to attend the program.

Miss Ellen H. Linden, Machine Operator, Accounting Division, also began working with the Department as a typist in the Registration Division. Two years later she transferred to the Accounting Division as Warrant Clerk. Since 1930, Miss Linden has performed the duties of Comptometer Operator, verifying the calculations on all payrolls and estimates paid out of the Highway Fund.

Mrs. Elizabeth Turpen, Laboratory Recorder, Materials and Tests Division, is another who started her career with the Department in the Registration Division as a typist. About six months later she transferred to Materials and Tests as a stenographer and has remained with the Division where she is now in charge of the laboratory general files and is responsible for typing technical reports from research projects.

Fred T. Bennett, Engineer of Information and Statistics Division, began employment as an Assistant County

Engineer in Limestone County shortly after attending A & M where he studied civil engineering. He came to the Austin District in 1932 and has remained in this area, becoming head of the Traffic Services Division when it was created in 1947. In 1953 the Information and Statistics Division was created and he was placed in charge of it.

Herschel Brown of Plainview is Senior Maintenance Foreman in charge of all maintenance activities in Hale County, Lubbock District. Brown came with the Department as a Graderman at this same location and three years later he was made foreman.

Roy A. Brown, Skilled Laborer, Dallas District, was first employed in Ellis County as a Maintainer Operator. He was an experienced "blade" man even at that time. In addition to being an expert operator of every type of heavy equipment, he has an outstanding mechanical knowledge of all road-building machinery.

Lloyd C. Cooper of Jasper is Senior Maintenance Foreman in charge of maintenance work in the Jasper County maintenance section of the Beaumont District. He worked the first four years on an hourly basis and the last 26 years has served in supervisory capacities as Maintenance Foreman and Construction Superintendent. He is noted for both iron ore base and erosion control work.

O. F. Henderson, Assistant Maintenance Engineer, Maintenance Operations Division, is a native of Crowell and Chillicothe in Hardeman County. He first worked as a summer employee in Wilbarger County and became a member of the Austin District after receiving a degree in civil engineering from the University of Texas in 1925. He has been with the Maintenance Division for the last 21 years.

Max P. Homeyer, Senior Designing Engineer, Road Design Division, also began working as a summer employee. He started as Assistant Engineer in Blanco County. The following year he received a civil engineering degree

This is the group that received 35-, 30-, and 25-year awards at the September meeting of the Highway Commission.

Miss Erin Bradfield receives her 35-year certificate from Commission Chairman E.H. Thornton Jr.

from the University of Texas and returned to work in Blanco County. Since 1932 he has been with the Road Design Division where he is responsible for the final coordination of all PS&E's and for the submission of all Road Design plans to the Bureau of Public Roads.

Howard L. Kilbourne, Skilled Laborer, Amarillo District, lives in Stratford and is a member of the Sherman County Maintenance Section. Kilbourne is highly skilled in all phases of maintenance work.

Frank B. Ogle, Senior Resident Engineer, Lubbock District, originally of Tyler and Lufkin, was first employed as an Assistant County Engineer in Coleman County. He went to the Lubbock District in 1932 and has remained in the South Plains area. For the last ten years he has had charge of both design and construction of the Lubbock Urban Dispersal System.

Byron Reese, Expressway Engineer, Amarillo District, is in charge of all work in connection with the Amarillo Expressway. A native of Hawkins and Mineola in Wood County, he has both B.S. and M.S. degrees in civil engineering from the University of Texas. He worked as an Instrumentman in wood County during the summer of 1919 and returned as a permanent employee in Wise County as an Instrumentman two years later. The major portion of Reese's time has been divided between the Waco and Amarillo Districts.

J. D. Rice, Senior Designing Engineer, Road Design Division, supervises a plans review section, reviewing proposed highway design for one-half of the state. A product of Hillsboro, Rice studied civil engineering at A & M and stenography and accounting in Memphis, Tennessee. He came with the Department as a Clerk in the Aid Division then moved to Tyler and Dallas Districts before returning to Austin.

Melvin Lee Smith, Senior Equipment Supervisor, Dallas District, began employment as a Mechanic in Fort Worth District and four years

later transferred to Dallas as a Division Mechanic.

Charlie N. Stephenson of Liberty is a Skilled Laborer in the Liberty County Maintenance Section of the Beaumont District. Most of Stephenson's years of service have been spent as a Maintainer Operator, but he is now working as a sign man.

Calvin A. Tolson, Skilled Laborer in the Hopkins County Maintenance Section of the Paris District, has his home in Sulphur Springs. He works as both a Maintainer and a Tractor Operator and operates any equipment from a Number 2 shovel to a 100 HP motor grader.

The 53 employees who received awards at the November program were all men. Travis A. Henderson, Chief District Accountant, San Angelo District, was unable to attend the ceremony to receive his 35-year certificate. Henderson was first employed by the Department as a Draftsman in the Designs Division and was in the Austin Office until 1927 when he transferred to the San Angelo District. He has held his present title since 1933.

Thomas A. McBride, Senior Maintenance Superintendent of the Tyler District, is a native of Swan in Smith County. He began his highway career as a Mechanic in Smith County and has been connected with the Tyler District since his initial employment. Until 1952 most of his time was spent in operating and supervising the operation of heavy equipment.

Robbin F. Burns, Skilled Laborer with the Sterling County Maintenance Section of the San Angelo District, was the first of the 30-year men. He is an expert equipment operator and also acts as assistant maintenance foreman. His father retired as a Maintenance Foreman a few years ago from the Abilene District and he has a brother who is still active with the Abilene District.

James Clyde Fox, Senior Maintenance Foreman, Austin District, was born in Fiskville and attended public schools there. He has been connected

Miss Freda Swiedom, unable to attend the awards program, receives a 35-year certificate from D.T. Harkrider, Director of Motor Vehicle Division.

Fifty-three men received awards at the November Awards Day program.

with the same District all of his 30 years and is especially qualified in both asphalt and center striping work.

Refugio Cantu Guerra, Skilled Laborer, Pharr District, lives in Laredo and serves as a gang foreman with the Webb County Maintenance Section. Guerra is the father of eight children, six boys and two girls.

Charley O. Huff, Semi-skilled Laborer with the Wood County Maintenance Section of the Tyler District, makes his home in Mineola. He is in charge of right-of-way mowing and general right-of-way maintenance in his section.

Arnold R. Kelley, Senior Resident Engineer, Austin District, is in charge of construction in Travis and Hays Counties. He was first employed as Rodman in Anderson County and has been associated with the Tyler, Del Rio, Houston, and Corpus Christi Districts. Kelley recently spent six weeks in the Republic of Panama as consultant to their highway department.

Joe M. Middleton, Senior Maintenance Foreman, Abilene District, is in charge of all maintenance activities in Scurry County. A native of Snyder, he began employment as a Laborer with the Scurry County Maintenance Section and has been associated with this unit for the 30 years of his service.

Odell P. Owens, Chief Inspector, Houston District, was born at Grapeland, Houston County, and began highway work as a Rodman in Harris County. For the last 26 years he has been engaged in inspection work and it is said that he can estimate the amount of concrete slump better than a standard test cone.

Herbert O. Rouse, Senior Maintenance Foreman, Corpus Christi District, makes his home in George West and has charge of maintenance activities of the Live Oak County Section. He is especially qualified in asphalt work.

Floyd L. Smith, Supervising Designing Engineer for the Fort Worth Expressway, is in charge of designs

Thomas A. McBride is congratulated by Thornton as he receives his 35-year award.

and plans for this office. A native Missourian and former school teacher, he came with the Department as a Draftsman in Cameron County. He transferred to the Fort Worth District in 1932 and became a Designing Engineer with the Urban Project Office when it was created in 1945.

Hubert Snyder, Skilled Laborer with the Wood County Maintenance Section of the Tyler District, is a resident of Mineola. He is assistant maintenance foreman of his section.

● ● ●

The American Automobile Association estimated that some 46 million cars had breakdowns of one kind or another in the past year, an average of nearly one breakdown for every car on the road. Flat tires, battery, and ignition trouble were the most numerous causes of roadside delays.

(National Travel Clinic News - April 10, 1955)

Pharr, our southernmost District, was formed as a separate unit in 1932 from ten counties of the Corpus Christi Division. It is a study in contrasts. Its ten counties encompass some of the most highly industrialized agricultural land in all of Texas and some of the most desolate brush country in the state. U. S. 83 in Hidalgo and Cameron Counties runs almost continuously through small towns and is known as the Main Street of the Valley, while U. S. 77 passes through ranching country where signs must be erected warning motorists of the distance to the next filling station. Signs reading Alto and Despacio are as common in this bilingual District as those reading Stop and Slow.

The rich lower Rio Grande Valley area of District 21 has heavy vegetable and fruit trucking traffic, as well as a rapidly developing winter tourist trade. At the other extreme is Zapata County which was first crossed by a paved highway in 1940, and has a population of 4, 000 in comparison with Cameron County's 125, 000. Much of the land in the District was originally included in early Spanish royal land grants, and San Ignacio in Zapata County is said to have the oldest house in the state.

While Amarillo, Wichita Falls, and other more northern Districts are shoveling snow and worrying about antifreeze this month, for tourists the Valley is a winter mecca of brilliant flowers, rolling surf, and balmy breezes. Growing grass is a year-round right-of-way problem, and outdoor work goes on for the entire twelve months.

Land in District 21 is described as rolling Rio Grande Plain brush country, or Coastal Plain prairie, or river delta, and highway crews are likely to have to deal with such exotic-sounding natives as ebony and palm trees. Soils vary from clay loams to sand, and from alluvial in the river valley to bare rocky hills. In this setting of lush semitropical valley and arid semidesert, the 540-plus employees of the Pharr District carry on the routine, every-day business of building and maintaining the District's 1, 861 miles of highway.

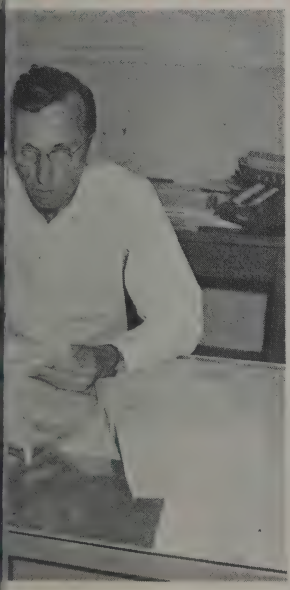
J.F. Snyder, District Engineer at Pharr.

THE DISTRICTS P

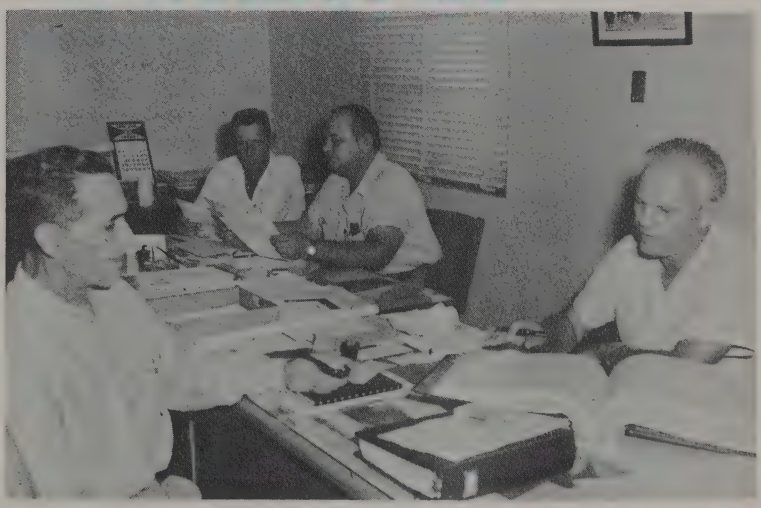
Along with pavement patching, lette
Here S.R. Busby, Assistant District E

Showing the Spanish influence on area architecture, the DISTRICT 21 office building stands among lush tropical shrubbery common to the Rio Grande Valley.

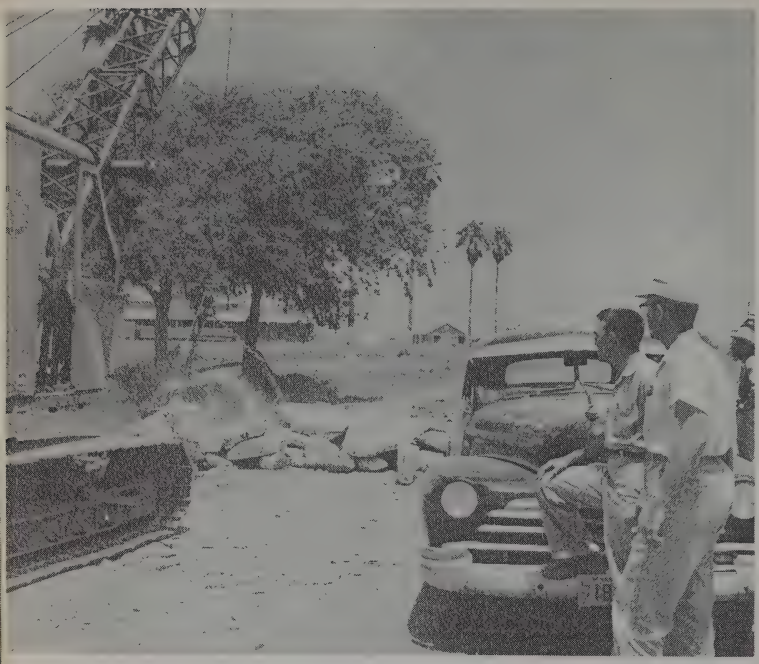
SS IN REVIEW DISTRICT 21



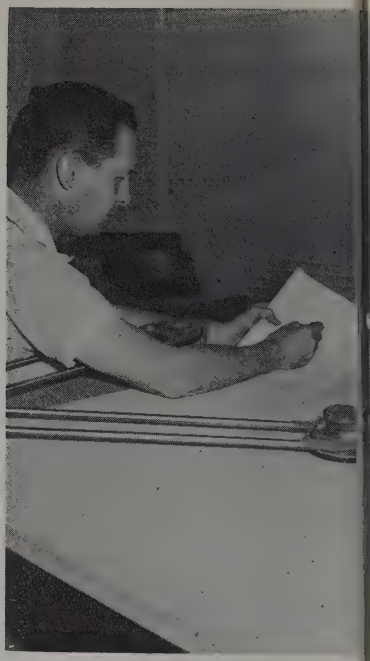
st always be written.
er and TEXAS HIGH-
chilleau, Senior Clerk



Maintenance business in District 21 is under discussion here by J.T. Martin, Senior Resident Engineer, A.L. Wood, Senior Maintenance Foreman, Tracey Hallmitton, and Clyde Sutter, Maintenance Superintendents.



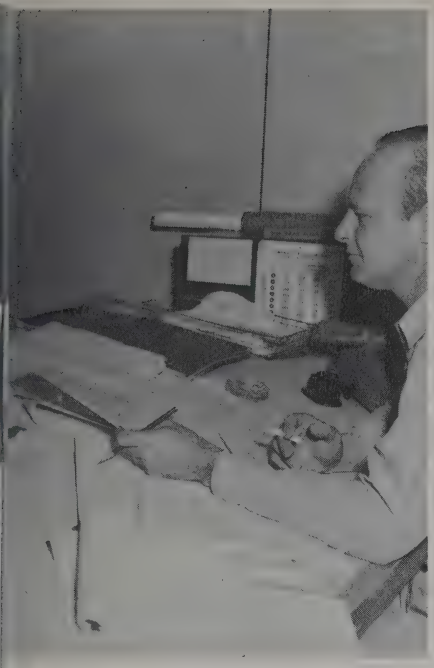
Inspecting removal of old pavement for relocation of U.S. 281 west of Brownsville are C.G. Gárcia and B.T. Clark, Associate Resident Engineers.



Preparing estimates for maint specifications are Charles Fran Draftsmen.

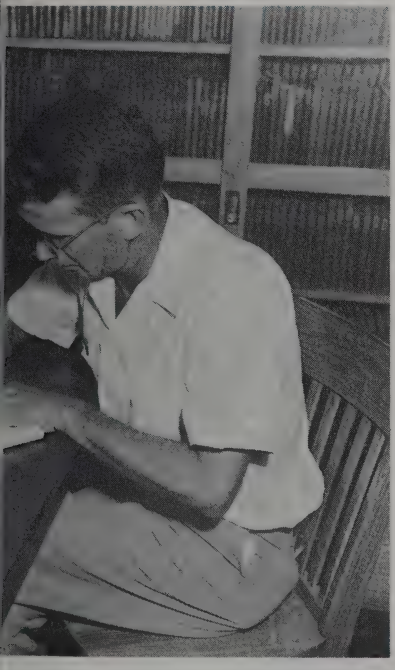
Repairing wheel on another mowing machine are Pedro. Munoz, Common Laborer, Filemon Garza, Senior Maintenance Foreman, and Sandalio R. Garcia, Skilled Laborer.

"If we put the castor beans here, or so John B. Coston, Landscape saying to himself.



nance projects and checking
Jr., and Ross Fitzpatrick, Senior

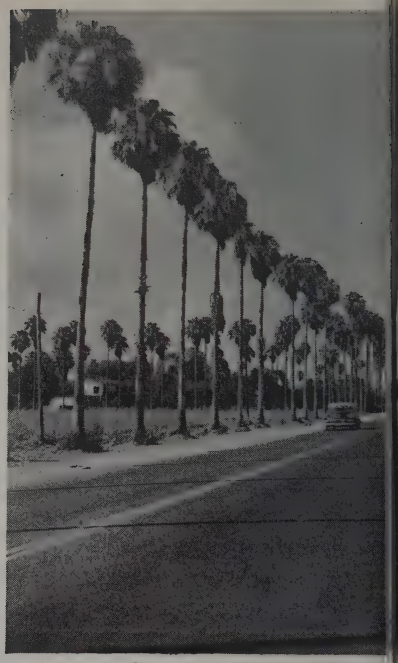
Willie Harris, Junior Clerk, discusses the issuance of a permit with Pat Bloomfield, District Office Clerk and TEXAS HIGHWAYS cover girl on the January, 1955, issue.



the date palm should go there. ."
Supervisor for Pharr seems to be

Inspecting monument near the site of the old court house in Zapata are O.W. Thornton and R.A. McMullin, Senior Maintenance Foremen. This entire area has been inundated by Falcon Dam. McMullin began working for the Highway Department in 1928 on roads now covered by the new lake.

Translating records into neat columns of figures is part of Bonnie Van Nest's every-day job. She is a District Office Clerk.



U.S. 281 begins in snow-bound time it gets one mile south of Pharr

Checking on a grader is J.N. Harris Jr., Rodman.

Mounds of scarlet and purple are a few of the reasons snow- so appealing in January.

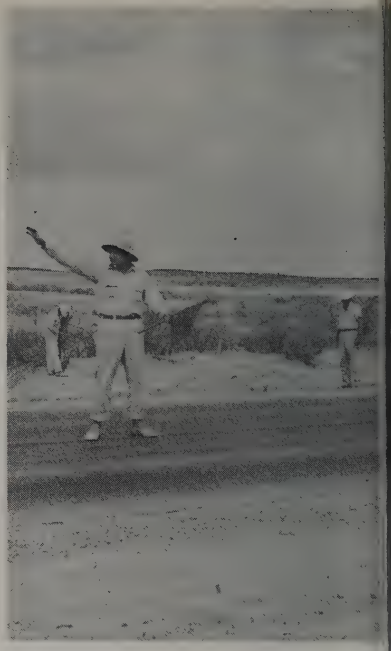
Winnipeg, Canada, but by the
looks like this.

Maintenance work is forever with us. Patching pavement on U.S. 77 between Combs and Harlingen are left to right, Apolonio Barrera and Ernesto Flores, Common Laborers, and F.E. Sharer, Skilled Laborer.

bougainvillaea and tall palm trees
bound northerners find the Valley

Another tourist attraction in District 21 is the Brownsville-Matamoros bridge across the Rio Grande leading to Old Mexico.

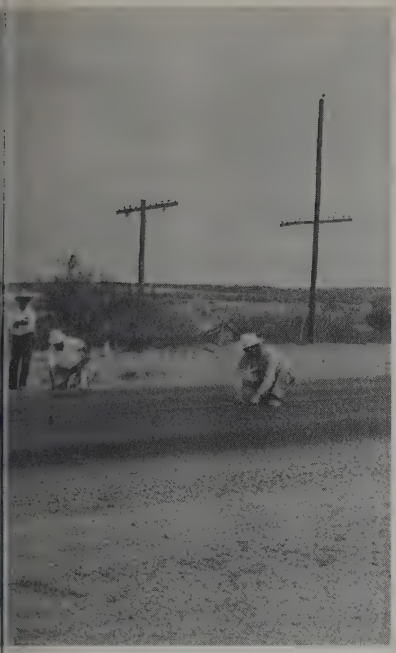
Loading barricades on truck on U.S. 83 northwest of Roma are Jose Pena and Rafael Martinez, Common Laborers, and Juan Alvarez, Skilled Laborer.



Working on U.S. 83 topograph
lar, Common Laborers, Reuben R
Alejandro Garcia, Party Chief
Guillen, Semi-skilled Laborers.

Digging post holes for signs near Brownsville are William R. Hollon, Common Laborer, and John Cooper, Semi-skilled Laborer.

Checking on work on a 42-inch
miles west of Brownsville are Jose
Engineer, and Charles R. Glide



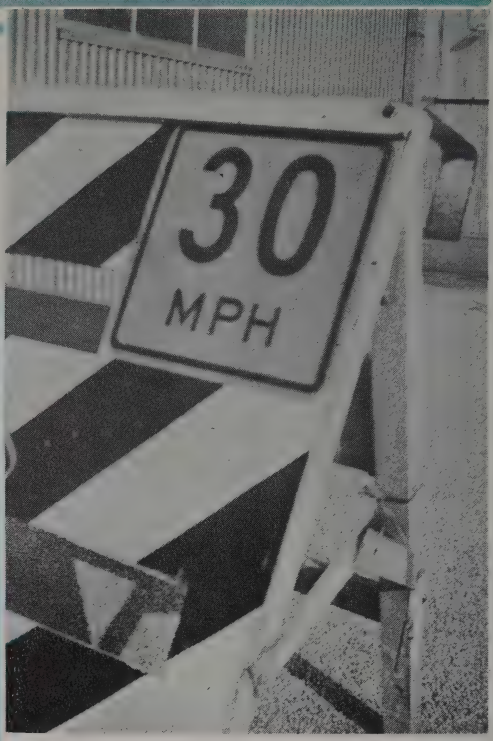
ıre Jaime Rivera and Ruben Cuel-
Guerra, Senior Resident Engineer,
ınd Federico Garcia and Mario

Guillermo Gomez, Semi-skilled Laborer, and Amado Alvarado and Rufino Cruz, Common Laborers, hitch a trailer to a truck in preparation for mowing right of way.

iphon across U.S. 281 fifteen
.. Gonzales, Associate Resident
vell, Checker.

Shifting white sands have to be contended with in District 21 also. These dunes are just off U.S. 77 between Kingsville and Raymondville.

IMPROVING BARRICADE



Gusts of wind have frequently caused the brace on this barricade to fold, letting it collapse and fall.

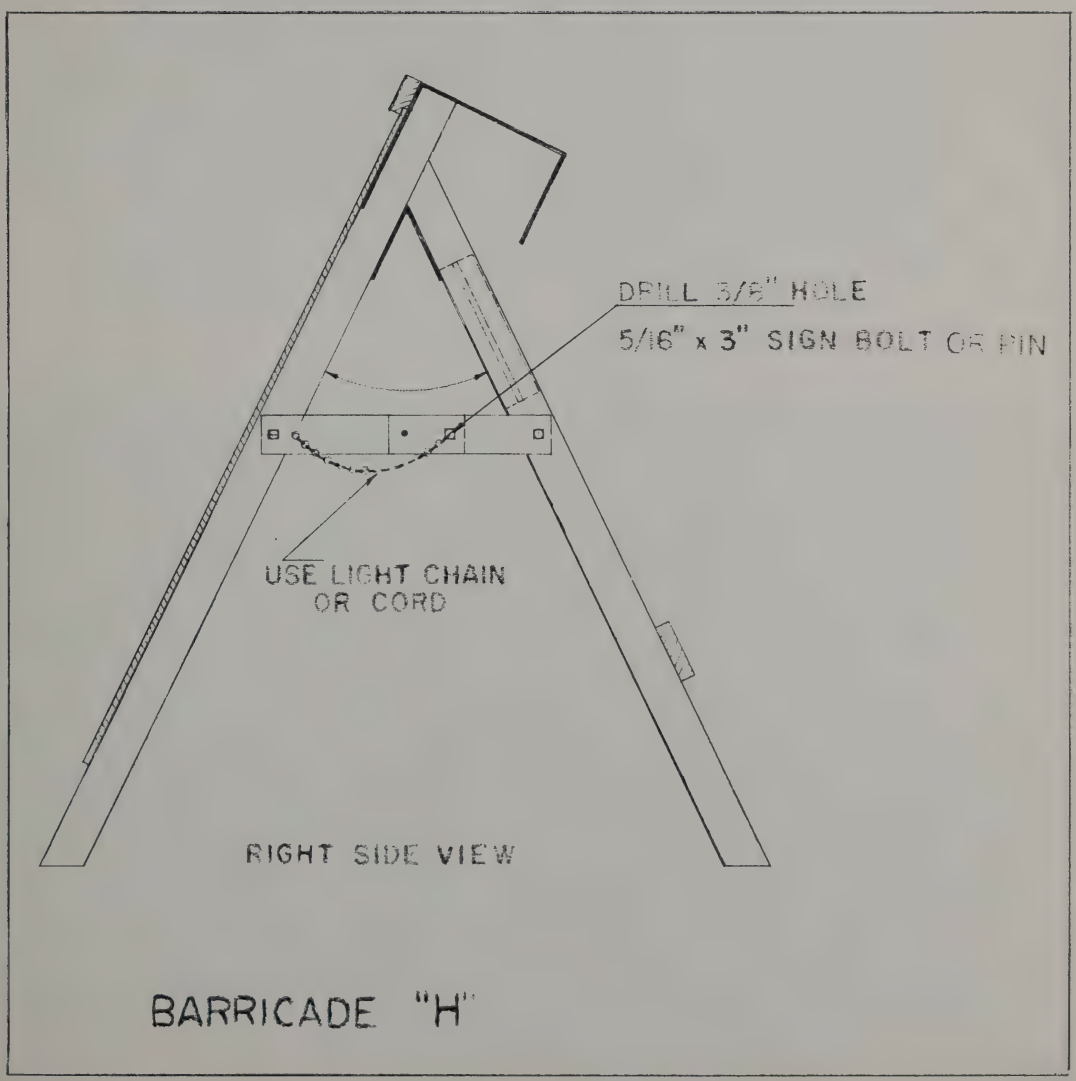
Frank Van Houten, Senior Maintenance Foreman
District 15

HAVE some time, considerable difficulty has been experienced by maintenance crews in District 15 in preventing the small Barricade "H" from collapsing when exposed to strong winds or fast-moving traffic, especially when the barricades are placed close to or on the riding surface of the road.

To help prevent the barricade from collapsing and to make it more rigid, we decided to drill a 3/8-inch hole in the two straps and use a 3/16-inch sign bolt or pin in it.

The sketch shows a right side view of the barricade with pin in place.

By installing the small pins with chain retainers, this trouble is eliminated.



TRACTOR MOUNTED WAGON DRILL

R.N. Jennings, District Maintenance Engineer
District 7

The shop and force account personnel in District 7 have borrowed an idea from equipment used in drilling holes in concrete pavement for undersealing and adapted it for use in drilling roadway cuts on flexible base sources.

The mounting of the drill which is illustrated permits one man to move and operate the equipment with a minimum of lost time for moving. This drill may be detached from the tractor when the tractor is needed for other tasks.

It has been found that drilling and shooting flexible base sources considerably increases the production of a small shovel and decreases the amount of time that it is out of service for repairs.

TRANSPORTING A Jari Mower

G.W. Black
Assistant District Maintenance Engineer
District 2

In the past when only one Jari mower was available, it was necessary for two men to go along with this machine in order that it could be loaded and unloaded. E. C. Clay, Senior Maintenance Foreman in Parker County, saw a need for devising some method whereby one man could perform this operation. He built a platform and found that by attaching it to the spreader box hitch of a truck with the bed raised, the mower could then be placed on this platform. By securely chaining the mower to the platform and then to the end of the bed, the mower could be moved easily from one location to another. As a safety precaution, red flagging is tied to the end of the mower.

This simple attachment constructed of two by fours and two by sixes has enabled the operator to move from one location to another without another man to assist in the loading of the heavy and sometimes hot mower.

Loading mower.

Mower ready for transporting.

Attached platform.

materials & tests

ED. NOTE: This is the third of a series of articles on the Materials and Tests Laboratory at Camp Hubbard in Austin. The first article was a discussion of test procedures in the Asphalt and Chemical Section and the second was on the Cement Testing Section.

Asphaltic concrete, as differentiated from sheet asphalt, is a comparative newcomer in the field of paving materials. It had its beginning about 1905 as a patented process, and it was only after these patents had expired that it came into very wide use. It was in 1905 also that the Rhode Island State Highway Department began experimenting with it as a surface for rural roads.

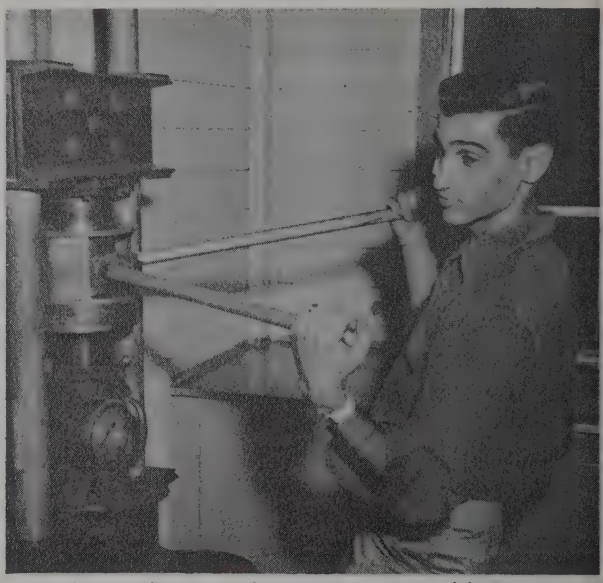
However, the ancestry of asphaltic concrete — the idea of using aggregate and asphaltic material — goes back much farther. In the United States, as early as 1834, a patent had been granted to John H. Cassell for a bituminous surface corresponding to the present penetration bituminous macadam. In the 1870's some of the East Coast cities began paving with Sicilian rock asphalt which was brought over as ballast in ships sailing from Europe. The value of this rock as a paving material was accidentally discovered in 1843 by a Swiss engineer watching pieces of it being crushed under the wheels of a cart from which they had fallen. In 1854 the first limestone rock asphalt pavement was laid in Paris, and its popularity soon spread over Europe. It was exported to the United States until the price became prohibitive. Efforts were then made to imitate the natural rock asphalts by using sheet asphalt and various combinations of different types of sands, the results being the evolution of our present-day asphaltic concrete.

Asphaltic concrete is commonly referred to as a combination of mineral aggregate and asphaltic material. The combinations of these ingredients are almost limitless, and for design and production of a quality bituminous mixture, certain measures of control must be exercised and compliance with present specifications checked.

The Asphaltic Concrete Section of the Materials and Tests Division was organized in the year 1939, and immediately entered into an extensive research program. As a result of this program and the many laboratory

Robert Kriegel, Associate Asphalt Engineer, weighs aggregate sample on analytical balance.

Mike Jackson, Senior Lab Assistant, prepares trial mixtures of asphaltic concrete.



Jack Gerling, Lab Assistant, molds an asphaltic concrete specimen with gyratory shear molding apparatus.

investigations that were made, many new thoughts on the design and control of asphaltic concrete were evaluated with final acceptance of many new test procedures and laboratory test equipment.

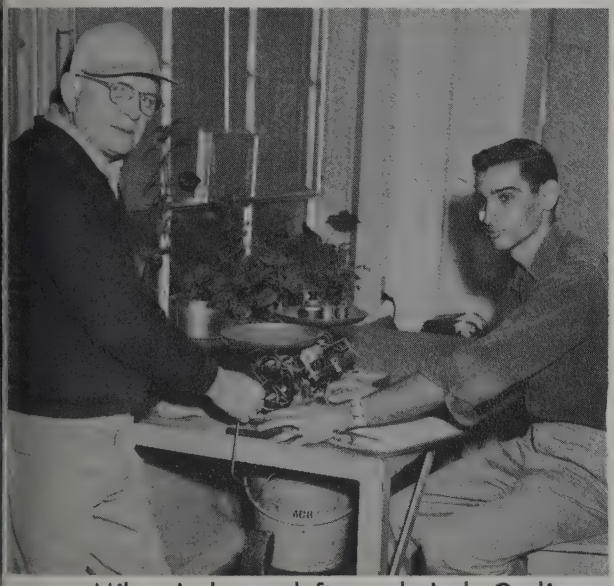
In the 1953-54 fiscal year, the Texas Highway Department used 1,460,236 tons of hot-mix asphaltic concrete, 239,731 tons of hot-mix cold-laid asphaltic concrete, 32,229 tons of cutback asphaltic concrete and 541,385 tons of rock asphalt premix. Quantities such as these necessitate many tests both in the laboratory and in the field.

The function of the Asphaltic Concrete Section is to aid engineers in the field prior to the beginning of bituminous paving projects with asphaltic concrete design problems and to perform control tests during the time the project is in progress. Prior to the adoption of new test procedures and the use of new types of test equipment as the result of the research program previously mentioned, bituminous paving operations were normally on a trial and error basis. Quality tests on bituminous mixtures were often made by the "eye ball" method which was to be found only in the hands of a few experienced asphalt men. Actual design and control of hot-mix asphaltic concrete is a very important matter and to produce a quality bituminous mixture the chosen combination of aggregate or aggregates and asphaltic material must be derived from an outlined design method utilizing definitely proven procedures rather than a design obtained by chance.

Many bituminous paving mixtures

are designed on the job in the field and at the District laboratories. However, with the ever-increasing road-building program and the trend toward the use of local materials in asphaltic concrete mixtures, the need for laboratory design and control is very apparent.

The design of an asphaltic concrete paving mixture as performed by the Asphaltic Concrete Section consists of taking the materials proposed for use as submitted by the engineer on the project, and with these materials making quality tests prior to their use in the design. With the acceptance of the materials for use, pilot tests are made to determine the portions and combinations of aggregates necessary to produce a bituminous mixture that will comply with governing specifications and contain the essential properties of a quality mixture. Consideration is given to the cost of all materials proposed for use and to the quantity in which they are produced, to secure a suitable mixture with the greatest economy possible.



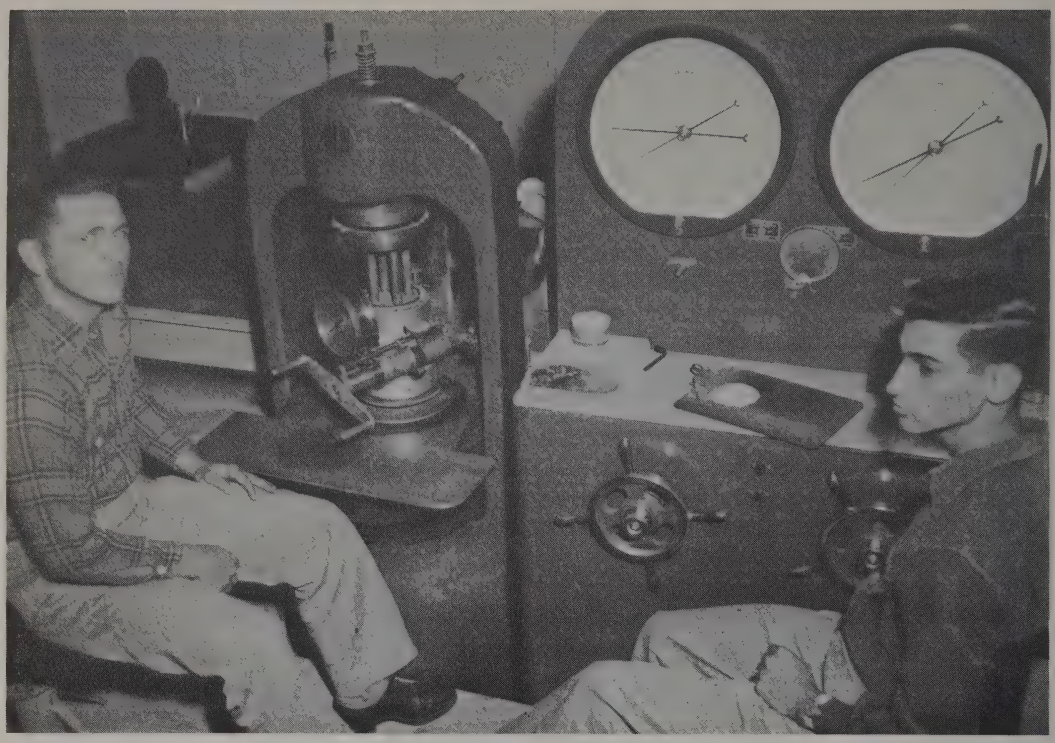
Mike Jackson, left, and Jack Gerling weigh a molded specimen with density determination.

After the selection of the best proportions and combinations of aggregate has been made, the proper amount of asphaltic material must be determined. This is accomplished by making trial mixtures in the laboratory with various asphalt contents. Five asphalt contents spanning the range specified by the governing specifications are used. Three specimens are made for each asphalt percentage

H.H. Williams, Section Supervisor, adjusts Hveem Stabilometer.

selected. These mixtures are mixed and molded at a temperature of 250°F. Later when the specimens have cooled to room temperature, density determinations are made, and the specimens are then prepared for the modified Hveem stability test. Results from these tests enable the proper asphalt content to be selected.

Asphaltic concrete specimens as used for quality tests are four inches in diameter and two inches in height. These specimens are molded by the "Gyratory Shear Method" of molding as developed by the Asphaltic Concrete Section of the Materials and Tests Laboratory. This method of molding imparts a shearing and kneading action throughout the depth of the specimen which results in uniform density and minimum degradation of the aggregate. Specimens molded in this manner have characteristics very similar to bituminous mixtures as placed on the

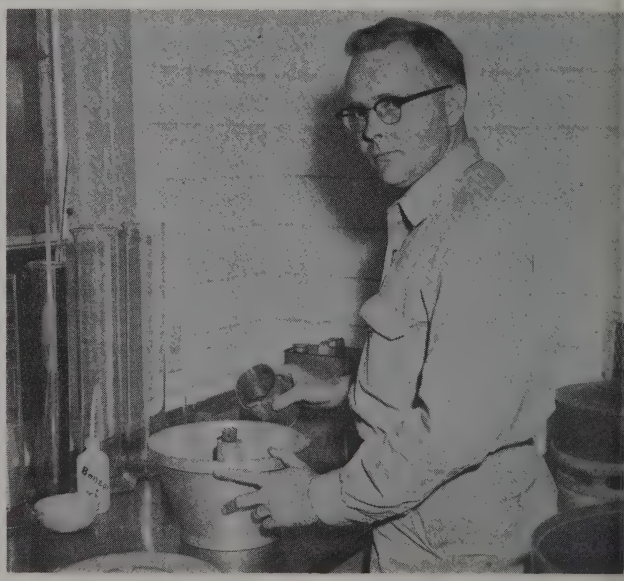


Charles Hausenfluck, Lab Assistant, left, and Jack Gerling are running Hveem stability test.

road by normal construction procedures. Present specification requirements for hot-mix asphaltic concrete specify that mixtures, when designed and tested in accordance with prescribed laboratory procedures, shall have a minimum density of 94 per cent, a maximum density of 98 per cent and an optimum density of 96 per cent. A minimum stability of 35 per cent is also specified, this value to be determined by the modified Hveem stability test. Mixtures not meeting these specified qualities shall be changed until specifications are complied with. It is not uncommon for several designs to be made before a satisfactory bituminous mixture is achieved, and as is often the case, different types of aggregates with various desirable qualities have to be obtained and incorporated into the mixtures.

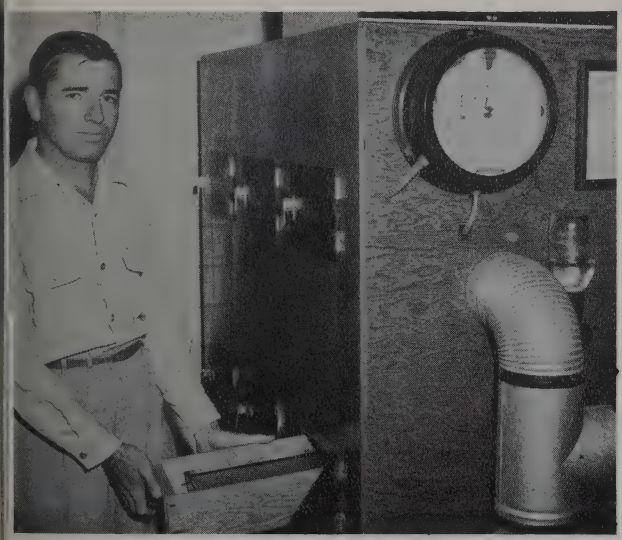
The Hveem Stabilometer was developed by F. N. Hveem, Materials and Research Engineer, Division of Highways, State of California. The original test procedure was later modified to some extent by the Texas Highway Department and adopted as a standard test.

Asphaltic concrete specimens are molded daily on each asphalt paving



H.H. Williams prepares to run extraction test on asphaltic concrete. Asphalt and aggregate are separated in rotary extractor.

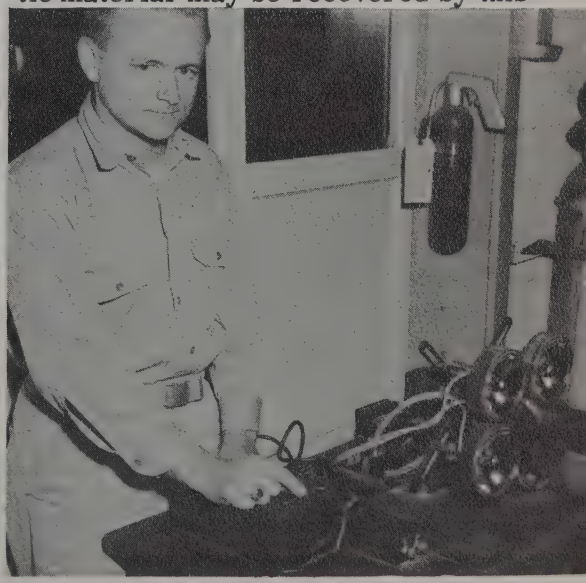
Charles Hausenfluck with Abson recovery equipment, left, moisture and volatile stills, and Soxhlet extraction setup.



Arthur J. Hill, Senior Asphalt Engineer, places sample in membrane curing cabinet, used to determine water-retaining qualities of membrane curing compounds, aids in curing concrete.

project throughout the state and are submitted to the Asphaltic Concrete Laboratory for the Stability Test. Specimens are shipped to the Laboratory by pratically every conceivable means of transportation. The choice for this service is left with the project engineer, and is usually influenced by the speed with which test results are desired. Specimens as received in the Laboratory are placed in a constant temperature, full air-circulating oven, and heated to a temperature of 140°F. To reach this temperature a specimen must remain in the 140°F. oven for a minimum of four hours. Hveem stability test results are normally available about five hours after the specimens have reached the laboratory and are usually teletyped directly to the District office or in many instances test results are telephoned direct to the project site. As many as 150 specimens have been handled in one day in this manner by the Asphaltic Concrete Laboratory.

Many routine tests are performed daily by the Laboratory which are classified as a field service. These services are performed very often as an aid in the solution of an immediate field problem and in other instances in the form of special investigations of new products or new methods. Extraction tests are made on completed bituminous mixtures which enable the percentage of aggregate and the percentage of asphalt to be accurately determined as a check on actual hot-mix plant operation on the job. Asphaltic material may be recovered by this



Robert Kriegel adjusts equipment used for measuring reflectivity of reflector buttons.

test and by the Abson recovery method. Quality tests may then be made on the asphalt binder and effects of construction procedure and weathering may be determined.

Several tests or determinations are also made by the Asphaltic Concrete Section that have little association with asphaltic concrete. Reflectivity tests are made on reflector buttons, and membrane-curing compounds are tested for water retention qualities. These tests are performed by this section as a result of test equipment having been designed and built by the Asphaltic Concrete Laboratory. Equipment for these tests is not available from commercial sources and test services of this nature require experienced laboratory personnel.

Another service of importance that is performed by the Asphaltic Concrete Laboratory is the inspection service available at ten different commercial plants that produce hot-mix cold-laid asphaltic concrete and at two commercial plants that produce rock asphalt premix and rock asphalt coverstone. Full-time inspection forces are maintained at these plants enabling any material purchased by the Highway Department to be inspected at the point of origin and either accepted or rejected as complying to specification requirements before being shipped to the job site.

Robert Kriegel turns reflector buttons to proper angle for testing. The two tables holding the apparatus are usually placed 50 feet apart.

The Asphaltic Concrete Section of the Materials and Tests Division is mainly a service organization which strives to be of service to the engineers in the field and willingly offers any assistance which may be of value to field personnel.

● ● ●

In case you're interested in New York taxis . . . New York City reports that small-size taxicabs introduced seven months ago have a safety record nearly twice as good as larger models. For every 100,000 miles traveled, smaller cabs had an accident ratio of 1.30, against 2.28 for larger cabs. The report said that the greatest single source of cab accidents was the practice of following too closely -- larger cabs were involved in 782 short-stop accidents against seven for the smaller models. Currently, there are 2,040 small-size cabs in use and 9,746 king-size taxis. Number of cabs that may operate at one time in New York City is fixed by law at 11,786.

(National Travel Clinic News - April 10, 1955)

THE KIND WE LIKE TO GET . . .

. . . This is just a "thank you" for the wonderful help you gave us in planning our recent vacation trip. A dust storm blew us into your office on November 2, but it was good luck in disguise. You gave us an armload of marked maps and folders, and a most enthusiastic sales talk about interesting things to see and do in Texas, so that when we left you we were greatly encouraged.

We used every bit of that information. We just about wore out the map, and we arranged and numbered the folders so we could refer to each one as we needed it, and the result was a wonderful trip.

But we are especially grateful to you because you told us about so many interesting things that we would otherwise have missed completely. Notably, the permanent exhibits at the fairgrounds in Dallas, the salt mine at Grand Saline (but they don't have the salt block house any more), the monument and battleship at San Jacinto, the Aquarena at San Marcos (which we saw in a snowstorm!), Padre Island where we spent a whole day that we hadn't planned to, and King Ranch, where we were lucky enough to arrive at the precise moment that they were beginning their annual auction of pure-bred stock. We watched them sell one Santa Gertrudis bull for $28,000 in less than five minutes!

We spent fourteen days in Texas, traveled 3,158 miles in the state, and came home with enough pleasant memories to last the rest of our lives. Your highways are magnificent — probably the best in the world, certainly far superior to ours. The trip down Highway 87, in East Texas, was like driving through a beautiful park. Your roadside picnic areas are a feature that should be copied by all the other states.

Texas is a rock-hound's paradise, too. We came to the conclusion the state must be made of agates, and we brought home enough of them to keep us busy cutting and polishing for a long time to come . . .

Mr. and Mrs. B.W. Hoyle
Mountain View, California

ANOTHER PLUG FOR PARKS . . .

. . . May we say that in all of the states we traversed, we found the best roadside parks and tables and accommodations of any state we visited in your great state. We even found a windmill and running water in one roadside park. You are indeed to be congratulated on the excellent condition and care which you maintain for tourists, and we did sincerely appreciate it.

The Luther C. Henry's
Oven Fork, Kentucky

ONCE A TEXAN, ALWAYS . . .

. . . I would like to call your attention to and, if possible, solicit your aid in behalf of a young married couple from Texas who are residing in the northern state of Ohio. Their plight is simple but since Ohio is well within Yankee territory, the situation is magnified to nothing short of tragic.

This family is about to take on the responsibility of parenthood. The cause of this phenomenon is as yet undetermined because normally no Texas baby would think of being born anywhere but Texas. However, this unborn upstart seems to be determined to be born regardless of the stigma he is placing upon himself and his parents.

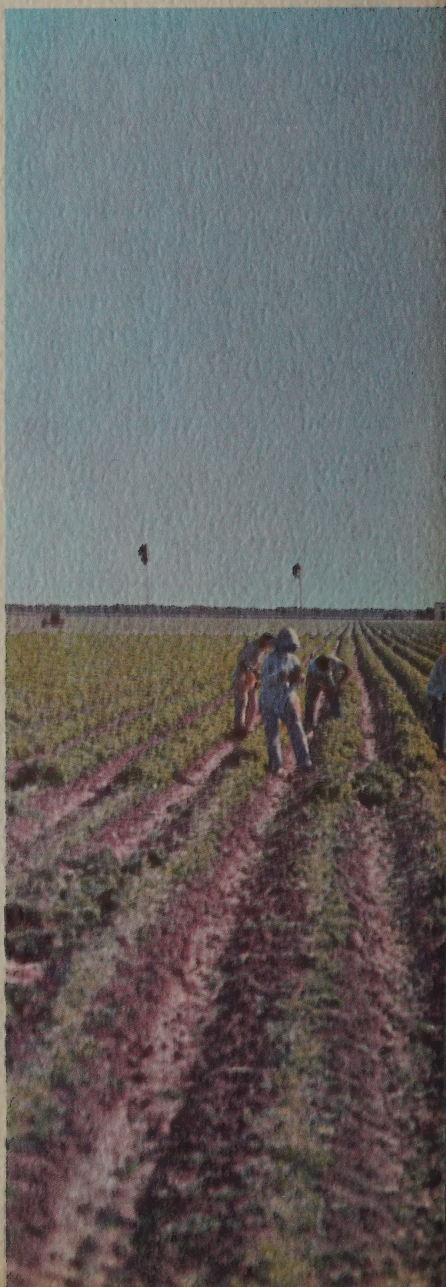
The fate of having a Yankee child, together with a southerner's normal distrust of Yankee hospitals and medical personnel is proving to be quite a strain for the young woman. Much of her unrest would be alleviated if she were assured that her child would enjoy Texas citizenship from the first breath on. To face a child's accusing eyes in later years would be a trial that any woman would want to avoid.

I respectfully request that citizenship papers be provided and the status of Texan be conferred upon this unborn child. Pertinent data should be left to be filled in due to the unreliability of the information which came from Yankee doctors who interpreted the mysterious language spoken by the unborn yet unitiated into the English-speaking crowd but whose southern drawl was perceived to be quite evident . . .

Sincerely,
King Davidson
T. Sgt., USAF

IT'S ALL FIXED NOW . . .

. . . In Regard to the _____ Road that has been under

construction about A year ,
Will you tell us why? ? ? ? ? ? ?
We have to travel this road some times six trips A Day.
Come over and try it,
You will see what I am trying to tell you.
It is very dangerous in places ,
Mr._____your man here says he can do nothing about it.
Will we have to write Austin to get it finished?
We are ready to do any thing to get it even back like
it was.
Please will you think about this Before one of us get

killed . I am your truely